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Resources, Community, and
Economic Development Division

B-276266

March 4, 1997

The Honorable John R. Kasich
Chairman, Committee on the Budget
House of Representatives

Subject: Department of Energy: Major System Acquisitions From 1980 Through 1996

Dear Mr. Chairman:

As requested, we are providing you with a listing of the major system acquisitions (MSA) that were conducted by the Department of Energy (DOE) between 1980 and 1996. Major systems are those projects that are critical to fulfilling an agency mission, entail the allocation of relatively large amounts of resources, and warrant special management attention. The enclosed table lists whether they were completed, terminated, or ongoing as of June 1996 and provides costs and schedule data associated with each. These data were compiled as part of our report entitled Department of Energy: Opportunity to Improve Management of Major System Acquisitions (GAO/RCED-97-17, Nov. 26 1996).

As discussed in our report, DOE has spent tens of billions of dollars on projects over the past decade and a half, many of which experienced significant cost overruns[1] and delays, and some have never been completed. These activities have involved large-scale first-of-a-kind projects requiring substantial construction and other expenses. These activities have included developing and producing nuclear weapons; operating nuclear reactors, uranium enrichment plants, and plutonium production plants; performing research and development on both military and civilian uses of nuclear energy; promoting and funding nuclear and other sciences; fostering energy conservation and efficiency; managing federal petroleum reserves; and, more recently, cleaning up environmental contamination resulting from the Department's past operations.

[1]Cost overruns are increases from a project's original cost estimate.

As shown in the table, from 1980 through 1996, DOE conducted 80 projects that it designated as MSAs, and it has completed 15 of these projects. Most of them were finished behind schedule and with cost overruns. Thirty-one other projects were terminated prior to completion, after expenditures of over $10 billion. The remaining 34 projects are ongoing. Cost overruns and "schedule slippage" have occurred and continue to occur on many of the ongoing projects.

We performed this work during the first 2 weeks of February 1997 in accordance with generally accepted government auditing standards. Please contact me on (202) 512-3841 if you or your staff have any questions. Major contributors to this report include William M. Seay and William F. Fenzel.

Sincerely yours,

Victor S. Rezendes
Director, Energy, Resources,
and Science Issues

Enclosure

ENCLOSURE I

HISTORY OF THE DEPARTMENT OF ENERGY'S MAJOR SYSTEM ACQUISITIONS FROM 1980 THROUGH 1996

Project name and construction line item number[a]	Dollars in millions				Schedule			
	Original cost estimate	Final cost	Cost at termination	Current cost estimate	Original completion date	Actual completion date	Termination date	Current completion date
10 MWe Central Receiver Solar Thermal Power Plant (76-2-b)	$108.0	$139.6			N/A	July 1987		
1-2 GeV Synchrotron Radiation Source (Advanced Light Source) (87-R-406)	$145.3	$146 0			March 1992	March 1993		
6-7 GeV Synchrotron Radiation Source (Advanced Photon Source) (89-R-402)	$626 9	$798 8			March 1996	February 1996		
Continuous Electron Beam Accelerator Facility (87-R-203)	$262 6	$513 1			March 1992	March 1995		
Ebullated Bed (H-Coal) Pilot Plant	$110 2	$277.9			March 1980	September 1982		
Fuels and Materials Examination Facility (78-6-f)	$167 6	$233.8			June 1983	August 1984		
Hanford Environmental Compliance (89-D-172)	$262 3	$242 4			March 1996	December 1995		
High Energy Laser Facility (NOVA) (78-4-a)	$195 0[b]	$177 7[b]			September 1983	December 1985		
Mirror Fusion Test Facility (78-3-a)	$132 5	$363 8			September 1981	February 1986		
Stirling Engine Systems Development	N/A	$130 0			N/A	December 1989		
Strategic Petroleum Reserves	$2,499.0	$2,461.0			June 1991	September 1991		
Tokamak Fusion Test Reactor (76-5-a)	$390.6	$497 5			June 1981	December 1982		
Tritium Loading Facility Replacement (88-D-130)	$125.4	$409.2			September 1989	December 1993		
Waste Isolation Pilot Plant (77-13-f)	$737 0	$709 9			June 1988	March 1991		
West Valley Demonstration Project	$446.0	$1,008 5			March 1988	August 1995		
50 MWe Geothermal Demonstration Power Plant (80-G-001)	$70 0		$28.0		March 1982		January 1982	
Advanced Isotope Separation Program	N/A		$275.3		N/A		May 1982	

ENCLOSURE I

Project name and construction line item number[a]	Dollars in millions				Schedule			
	Original cost estimate	Final cost	Cost at termination	Current cost estimate	Original completion date	Actual completion date	Termination date	Current completion date
Clinch River Breeder Reactor	$699.0		$1,600.0		1979		December 1983	
Compact Ignition Tokamak (88-R-902)	$444 5		$107 1		September 1993		1992	
Electric Vehicle Project	N/A		$180 0		N/A		1983	
Elmo Bumpy Torus Proof-of-Principle (80-MF-3)	$173.9		$28 1		June 1982		1984	
Fuel Processing Restoration (85-D-139)	$270.0[b]		$305 8[b]		September 1992		April 1992	
Fusion Materials Irradiation Test Facility (78-3-b)	$134 4		$105.9		September 1983		1985	
Gas Centrifuge Enrichment Plant (76-8-g)	$5,100.0		$2,814 1		June 1993		June 1985	
Hanford Waste Vitrification Plant (88-D-173)	$1,010.2		$418 3		September 1996		August 1996	
High BTU Synthetic Pipeline Gas Demonstration Plant (CONOCO)	$198.8		$53 7		March 1981		July 1981	
High BTU Synthetic Pipeline Gas Demonstration Plant (ICGG)	$156 8		$77.8		March 1981		July 1981	
Intersecting Storage Accelerator (78-10-b)	$398.6		$201.3		June 1986		1983	
Low-Level Waste Disposal Facilities (94-D-406)	$141.8		$7 0		September 2004		September 1996	
Medium BTU Industrial Fuel Gas Demonstration Plant	$93 0		$65.6		September 1981		July 1981	
Monitored Retrievable Storage Project (93-D-406)[c]	N/A		$35.7		N/A		N/A	
Multi-Tank Waste Storage Facility (93-D-183)	$240 0		$56.1		June 1999		December 1995	
New Production Reactor Capacity (92-D-300)	N/A		$1,257 0		2000		October 1992	
Plutonium Recovery Modification Project (89-D-125)	$370 8[b]		$24 3[b]		September 1997		October 1990	
Process Facility Modification (84-D-135)	$140 0[b]		$57 9[b]		N/A		June 1988	
Reactor Safety Assurance (90-D-150)	$109.1[b]		$15 6[b]		September 1994		June 1994	

ENCLOSURE I

Project name and construction line item number[a]	Dollars in millions				Schedule			
	Original cost estimate	Final cost	Cost at termination	Current cost estimate	Original completion date	Actual completion date	Termination date	Current completion date
Reactor Seismic Improvements (92-D-141)	$103 4		N/A		September 1996		August 1993	
Solvent Refined Coal Demonstration Plant (SRC-2)	N/A		$70.8		September 1984		July 1981	
Solvent Refined Coal Demonstration Plant (SRC-1)	N/A		$190.7		June 1984		August 1984	
Space Nuclear Reactor Power System (86-N-105)	$22.7[b]		$36 3[b]		December 1988		1992	
Special Nuclear Materials Research and Development Laboratory Replacement (88-D-105)	$210.0[b]		$37 0[b]		March 1994		February 1991	
Special Isotope Separation Project (86-D-148)	$530 0[b]		$85 0[b]		March 1995		N/A	
Strategic Petroleum Reserve Expansion	$1,460 0		$6.0		N/A		December 1993	
Superconducting Super Collider (90-R-106)	$5,893.6		$2,201 9[d]		March 1998		October 1993	
Tokamak Physics Experiment (94-E-200)	$694 0		$73 7		September 2000		1995	
Uranium Solidification Facility (formerly Fuel Production Facility) (85-D-145)	$85.0[b]		$116 3[b]		March 1988		February 1994	
Albuquerque Laboratory Environmental Restoration Project (AL-1)	[e]			1,348.0	N/A			2010
Albuquerque Production Environmental Restoration Project (AL-2)	[e]			$254 0	September 2019			2014
Albuquerque Environmental Restoration Project GJPR, MRAP (AL-5)	[e]			[e]	September 2004			September 2004
AVLIS R&D Project[f]	N/A			$1,304 9	N/A			October 1993
B-Factory (94-G-304)	$293 2			$293 2	March 1998			September 1998
Chemistry and Metallurgy Research Upgrade (95-D-102)	$204 0			$223 6	September 2003			September 2002
Defense Waste Processing Facility (81-T-105)	$1,529 5			$2,470.7	March 1990			November 1996
Environmental, Safety, and Health Enhancements (90-D-126)	$26 8			$95 5	June 1994			September 1996

ENCLOSURE I

Project name and construction line item number[a]	Dollars in millions				Schedule			
	Original cost estimate	Final cost	Cost at termination	Current cost estimate	Original completion date	Actual completion date	Termination date	Current completion date
Environmental Molecular Sciences Laboratory (91-E-100)	$217 8			$229.9	September 1995			September 1997
Facilities Capability Assurance Program (88-D-122)[g]	N/A			$447 7	N/A			N/A
Fermilab Main Injector (92-G-302)	$197 0			$259.3	September 1996			June 1999
Fernald Environmental Management Program	[e]			[e]	September 2023			September 2020
Formerly Utilized Sites Remedial Action Project	$706 0			$2,500.0	2001			2016
High-Level Waste Removal From Filled Waste Tanks (93-D-187)	$88 6			$828 2	September 1999			September 2008
High-Level Waste Tank Farm Replacement (91-D-172)	$296 2			$91.2	September 1998			June 1996
Idaho National Engineering Laboratory Environmental Restoration Project	[e]			$3,365.0	September 2019			2023
Initial Tank Retrieval System (94-D-407)	$245.0			$358 2	March 2010			March 2010
Non-Radioactive Hazardous Waste Management (83-D-148)	$20 7			$165 7	June 1986			June 1997
Nonnuclear Reconfiguration, Complex-21 (93-D-123)	$26 0			$198 1	N/A			June 1998
Nuclear Weapons Research, Development, and Testing Facilities Revitalization Phase II (88-D-106) Phase III (90-D-102) Phase IV (92-D-102) Phase V (94-D-102)	 $361 4 $70 1 $96 4 $82 0			 $306 6[h] $106 3 $95 8 $37 4	 September 1993 September 1993 September 1996 December 1997			 June 1998 June 1998 September 1997 March 1998
Oak Ridge Operations Office (Environmental Restoration Project)	[e]			[e]	N/A			N/A
Plantwide Fire Protection, Phases I and II (90-D-149)[i]	$321 2			$159 7	June 1997			December 1999
Radioactive Waste Management Complex Transuranic Waste Treatment and Storage Facility (90-D-177)	$146 5			$154 9	September 1994			April 1999

ENCLOSURE I

Project name and construction line item number[a]	Dollars in millions				Schedule			
	Original cost estimate	Final cost	Cost at termination	Current cost estimate	Original completion date	Actual completion date	Termination date	Current completion date
Relativistic Heavy Ion Collider (91-G-300)	$497 1			$616.5	June 1997			June 1999
Replacement High-Level Waste Evaporator (89-D-174)	$46 7			$154 1	March 1993			December 1997
Richland Environmental Restoration Project	[e]			$21,860 0	September 2018			September 2047
Rocky Flats Environmental Technology Site Environmental Restoration Project	[e]			[e]	June 2011			N/A
Savannah River Site Environmental Restoration Project	[e]			[e]	September 2019			September 2019
Security Enhancement, Pantex Plant (88-D-123)	$110.0			$130.0	June 1994			September 1997
Solid Waste Operations Complex (94-D-411)[l]	$290.3			N/A	September 1998			N/A
Uranium Mill Tailings Remedial Action--Ground Water Restoration	$777 0			$574 0	N/A			September 2014
Uranium Mill Tailings Remedial Action--Surface Project	$992 5			$1,349.0	September 1992			September 1998
Weldon Spring Remedial Action Project	$357.7			$865 0	September 1995			2001
Yucca Mountain Site Characterization Project[k]	$3,200 0			$4,300.0	May 1991			March 2002

Legend

N/A = Cost or schedule information not available or not yet developed

Note: All costs, unless otherwise specified, are "total project costs" The cost data were obtained from initial budget submissions, final cost reports, and other data provided by the Department of Energy (DOE)

[a]Projects that are not funded as construction line items do not have project numbers

[b]These amounts represent the project's "total estimated cost," which includes costs for such things as land, engineering, design, and construction Other costs, such as research and development, conceptual design, start-up, and initial training, are not available

[c]The Monitored Retrievable Storage Project was terminated, however, portions of the project were continued and have now been combined with other activities into the Civilian Radioactive Waste Management Strategic System.

ENCLOSURE I

[d]The termination activities for the Superconducting Super Collider are not yet complete The cost at termination for this project is based on data through fiscal year 1996

[e]DOE's original and/or current cost estimates for these environmental restoration projects do not estimate costs through their completion

[f]DOE is no longer involved in this project, however, the U S Enrichment Corporation has funding responsibility for AVLIS' development, and its directors may take action to further develop and commercialize this technology

[g]The Facilities Capability Assurance Program consists of a number of different subprograms intended to update and maintain DOE's nuclear weapons production facilities The project was expected to be funded at a level of $150 million annually until the deficiencies at the DOE facilities are identified and corrected. Consequently, the project does not have an original cost estimate or ending date

[h]The current cost estimate for Phase II, Nuclear Weapons Research, Development, and Testing Facilities Revitalization, was reduced because one subproject--the Dual Axis Radiographic Hydrotest Facility--was established as a separate project The estimated cost of this facility is $85 6 million.

[i]The current cost estimate for Plantwide Fire Protection, Phases I and II, reflects a planned reduction in this project's scope.

[j]This project is being divided into three separate subprojects, of which one is currently under construction, one is on hold, and one may be included in a privatization contract For these reasons, DOE is not maintaining cost and schedule data for this project

[k]The Yucca Mountain project involves only site characterization and not the actual construction of a waste repository Accordingly, the project is considered complete with the submission of an application to the Nuclear Regulatory Commission for authorization to construct a nuclear waste repository The original cost and schedule reflect a 1985 estimate by DOE. In Jan. 1992, the Secretary of Energy's Energy Systems Acquisition Advisory Board approved a $6 3 billion estimate for the Yucca Mountain project Officials from DOE's Office of Civilian Radioactive Waste Management consider this estimate to be the project's original cost estimate

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